The identity of *Lygosoma (Hinulia) misolense* Vogt, 1928 (Squamata: Scincidae)

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Abstract: *Lygosoma* (*Hinulia*) *misolense* Vogt, 1928, described from Misool Island, is redescribed from the two type specimens, and shown to be a junior synonym of the widespread species *Sphenomorphus simus* (Sauvage, 1879). A lectotype is designated, and an extended synonymy provided.

Key Words: Scincidae, *Sphenomorphus simus*, taxonomy, Misool Island.

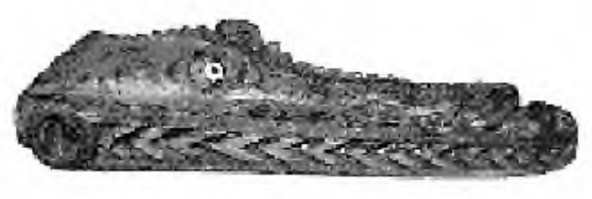
Introduction

Theodor Vogt (1928) described *Lygosoma misolense* from two specimens found among a small collection of lizards made on Misool Island by the ethnologist Odo Deodatus Tauern (14.xi.1885, New York – Freiburg im Breisgau, 11.vii.1926), and donated through Hermann Stitz (24.xii.1868 - 6.ii.1947) to the Zoologischen Museum, Berlin (ZMB, now part of the Museum für Naturkunde, Berlin). The species has received scant attention since. It was listed as a distinct species of *Lygosoma* by Brongersma (1933) and, with the division of that genus by Mittleman (1952), it was listed as a distinct species of *Sphenomorphus* by Greer and Parker (1967, 1971), Linkem et al. (2010) and Hedges (2014). Loveridge (1948) considered it a synonym of *Lygosoma* (*Sphenomorphus*) *variegatum jobiense* (originally described by Meyer, 1874 as *Lygosoma* (*Hinulia*) *jobiense*) but Loveridge's nomenclature has since been shown to be incorrect, with the two subspecies he referred to as *Lygosoma* (*Sphenomorphus*) *variegatum jobiense* and *Lygosoma* (*Sphenomorphus*) *variegatum stickeli* later shown to be a single species distinct from *Sphenomorphus variegatus* Peters, 1867 of the Philippines, initially *Sphenomorphus melanopleurus* Inger, 1958, then *Sphenomorphus stickeli* (Loveridge, 1948) by Inger (1961), and more recently, *S. simus* (Sauvage, 1879) by Shea and Greer (1999), while the name *jobiensis* was instead applicable to the species Loveridge had referred to as *Lygosoma* (*Sphenomorphus*) *megaspila* (Günther, 1877). None of these authors examined the types of *L. misolense*, which were first identified by Bauer et al. (2003) as ZMB 31523. Bauer *et al*. recommended that *Lygosoma misolense* be retained as a distinct taxon within *Sphenomorphus* pending examination of the syntypes. In this paper, I complete this task.

Materials and methods

The two syntypes of *Lygosoma misolense* (Plate 1 figs 1-2) are now ZMB 31523 and 64387, following re-registration of the smaller specimen. In redescribing the two syntypes, I adopt the head shield nomenclature of Taylor (1935), with the addition of the concept of subloreals, the single row of flattened scales separating loreals from supralabials in this species. Midbody scales are counted at the mid-point of the axilla-groin interval; paravertebral scales are counted on the left side of the midline from the first scale posterior to the parietals to the last scale anterior to the level of the hind limbs, with limbs held at right angles to the body; subdigital scales are counted on the fourth toe from the base of the crease between third and fourth toes, to and including the terminal sheathing scale at the base of the claw (this includes the terminal end of the metatarsal, which is incorporated into the base of the digit in this species).

Measurements were made with the structure held straight against a steel rule, or (for head measurements) with dial callipers, both sets of measurements taken with the instrument examined



under a dissecting microscope to ensure correct placement. Head measurements are to the nearest 0.1 mm; other measurements are to the nearest 0.5 mm. Snout-vent length (SVL) is from tip of snout to posterior edge of median precloacal scales, along the ventral surface; axilla-groin length (AGL) is from the posterior junction between forelimb and body wall, to the anterior junction between hindlimb and body wall, with the limbs held at right angles to the body axis; forelimb length (FLL) and hindlimb length (HLL) are from the medial extremity of the posterior crease between limb and body wall, to the tip of the claw, with the limb held at right angles to the body; head length (HL) is from the tip of the snout obliquely to the anteriormost margin of the external ear aperture; head width (HW) is at the widest point of the head, and head depth (HD) is at the deepest point of the head over the parietal table, including the lower jaw, at right angles to the labial margin.

Redescription of the syntypes of *Lygosoma misolense*

Vogt's (1928) description of the species was limited, although typical of the descriptions of that era. Vogt compared his new species only to *S. striolatus* (Weber, 1890), a species described from Flores in the Lesser Sundas, noting in particular unspecified differences in coloration, a lower number of subdigital lamellae, shorter limbs, and smooth, non-striate dorsal scales. To aid in discussion of the identity of this species, I provide a more extended description of the two syntypes, with the character states for ZMB 31523 first.

Snout short and blunt; rostral in broad contact with frontonasal, the suture straight; prefrontals in broad contact; supraoculars seven, the first three in contact with the frontal; frontoparietals paired; parietals in broad contact behind interparietal; nostril in centre of nasal; supranasals and postnasals absent; loreals two, separated by a long low subloreal (first of the series of subloreals) from the supralabials; suboculars 1-2 (1L/2R, 2L/2R); postsuboculars 6-7 (6L/6R, 7L/6R), lowermost not interdigitating with supralabials; supraciliaries 14-15 (15L/14R, 16L/15R), last few interdigitating with posterior supraoculars; supralabials 7-8 (7L/7R, 8L/7R), fifth (n = 3) or sixth (n=1) under centre of eye; last two supralabials each divided into an upper and a lower scale; primary temporals two; secondary temporals two, lower overlapping upper; postmental contacting a single infralabial on each side; three pairs of chin shields, first pair in contact medially, second pair separated by a single median scale, third pair separated by three median scales, all laterally contacting infralabials.

Midbody scales 38, 42; paravertebral scales 66, 61; subdigital scales below fourth toe 24-28 (24L/25R, 28L/27R), basalmost paired, imbricate, over distal section of metatarsal, remainder undivided and keeled; terminal two scales above fourth toe undivided; imbricate scales on dorsum of pes extending ventrally between fourth and fifth digits onto sole, without a sharp disjunction from the solar granules on anterior part of sole; preanals enlarged, median pair overlapping lateral scales. Dorsal and lateral scales finely granular, more so laterally.

Raw measurements of the two syntypes are provided in Table 1 (see Appendix). Proportions from these measurements are: AGL/SVL 42.9%, 42.5%; FLL/SVL 34.1%, 37.0%; HLL/SVL 57.1%, 61.6%; HLL/AGL 133.3%, 145.2%; HL/SVL 22.9%, 26.6%; HW/SVL 17.4%, 17.0%; HW/HL 76.0%, 63.9%; HD/SVL 13.4%, 13.7%, HD/HL 58.7%, 51.5%. Neither specimen has a complete, unregenerated tail, although that of 31523 is only missing the tip; the proportion of remaining tail length/SVL is 156.0%.

Discussion

In a few aspects, Vogt's description differs significantly from my examination of the two syntypes. In particular, he reported 11 supraciliaries, and 22 lamellae under the fourth toe. These are likely to reflect differences in definitions of the characters. However, it is unclear what character definitions Vogt used. In other character states, for example number of supralabials (7) and midbody scales (42), Vogt reports no variation, although there is variation between the syntypes. In two other character states given by Vogt (subdigital lamellae not keeled; dorsal scales smooth, lateral scales with pore-like, fine depressions), my examination of the syntypes is not in agreement with his description. There are no pores on the scales – instead the dorsal and lateral scales bear numerous fine tuberosities (Plate 1 fig. 3), although these are less pronounced on the dorsal scales than laterally. Vogt may have been misled by the limitations of the optical resolution of his microscope.

With the redescription of the syntypes of *Lygosoma misolense*, it is now clear that this species is synonymous with *Sphenomorphus simus* (Sauvage, 1879). The coloration (Plate 1 figs 1-2) falls within the range of variation of *S. simus*, and the presence of a subloreal row, a single row of keeled subdigital lamellae, imbricate scales extending onto the solar surface of the pes, seven supraoculars with the first three contacting the frontal, and small granules on dorsal and lateral scales are all characteristics of *S. simus*. The number of midbody scales (38-42) is within the range of variation of *S. simus* (38-44, mean = 40.1, n = 27, Inger, 1961; 38-45, n = 138 from the Sepik region and adjacent islands, and 37-49, n = 23 from the Bismark Archipelago, Mys, 1988; 37-47, mean = 40.8, mode = 40 (34%), n = 106, pers. obs.), as are the number of paravertebral scales (61-66 *vs* 59-72, mean = 64.2, median = 64, n = 108, pers. obs.) and subdigital scales (24-28 *vs* 20-30, mean = 25.1, mode = 25 (21%), n = 89, pers. obs.).

Only in the number of supralabials does *L. misolense* seemingly differ from *S. simus*. Inger (1958, 1961) considered *S. simus* (as *S. melanopleurus* and *S. stickeli*) to differ from *S. variegatus* of the Philippines in usually having 8 supralabials *vs* 7 supralabials, while Vogt (1928) reported *L. misolense* to have 7 supralabials. However, my examination of a larger sample of *S. simus*, covering a wider area than seen by Inger (1958, 1961), effaces the difference. Among 209 individuals of *S. simus*, although the mode was bilaterally 8 (n = 120, 57%), over a third had bilaterally 7 (n = 42, 20%) or asymmetrically 7/8 (n = 39, 19%), with the small residue asymmetrically 8/9 (n = 8, 4%). Further, the smaller syntype of *S. simus* is also asymmetrically 7/8.

Sphenomorphus simus is widespread in New Guinea, and reaches a number of island groups, including New Britain, New Ireland and New Hanover in the Bismark Archipelago and Kairiru, Karkar and Muschu along the Sepik coastline (Mys 1988), and Numfoor [formerly Mafor] and Yapen [formerly Japen] in Cenderawasih [formerly Geelvink] Bay (Sauvage 1879; Inger 1961. De Rooij (1915) reported it, as *S. variegatus*, from Biak [formerly Mysore] and Roon [formerly Ron] in Cenderawasih Bay and the Aru Islands, but did not record examining specimens to confirm the localities. Her records appear to be based on the earlier records of *Lygosoma naevium* (Gray, 1845) from these localities by Peters and Doria (1878), which remain to be confirmed as *S. simus*. The species also occurs in the northern Raja Ampat group (AMNH 94314-40, Batanta Island), and hence its occurrence on Misool, the southernmost of the larger islands in the Raja Ampat group is not unexpected.

With the addition of *L. misolense*, the already lengthy synonymy of this widespread and common species gains one more name:

Sphenomorphus simus (Sauvage, 1879)
Lygosoma (Hinulia) sima – Sauvage, 1879: 54. Lectotype MNHN 1996.1114, designation by Shea & Greer 1999.
Type locality: Ile Mafor [= Namfoor I.]

= *Hinulia naevia* (part) – Gray 1845 (non *Scincus naevius* Duméril & Bibron 1839).

= *Lygosoma* (*Hinulia*) *variegatum* (part) – Boulenger 1887 (non *Lygosoma (Hinulia) variegatum* Peters 1867).

= *Lygosoma* (*Hinulia*) *misolense* – Vogt 1928: 334. Lectotype: ZMB 31523, here designated. Type locality: Misol [= Misool Island, Indonesia].

= *Lygosoma totocarinatum* – Vogt, 1932: 286. Holotype: ZMB 25768. Type locality: [Sepik River, Papua New Guinea, fide Shea & Greer 1999].

= *Otosaurus simum* – Smith 1937.

= *Otosaurus variegatum* (part) – Smith 1937. (non *Lygosoma* (*Hinulia*) *variegatum* Peters 1867).

= *Lygosoma* (*Sphenomorphus*) *variegatus stickeli* – Loveridge 1948: 345. Holotype: MCZ 49326. Type locality: Gusiko [Morobe Province, Papua New Guinea].

= *Lygosoma* (*Sphenomorphus*) *variegatus jobiense* – Loveridge 1948 (non *Lygosoma (Hinulia) variegatum* Peters 1867, non *Lygosoma (Hinulia) jobiensis* Meyer 1874).

= *Lygosoma* (*Sphenomorphus*) *simum* – Loveridge 1948.

= *Sphenomorphus simus* – Mittleman 1952.

= *Sphenomorphus stickeli* – Mittleman 1952.

= *Sphenomorphus totocarinatus* – Mittleman 1952.

= *Sphenomorphus melanopleurus* – Inger 1958: 264. Holotype: FMNH 78383. Type locality: Marienberg, Sepik River [East Sepik Province, Papua New Guinea].

= *Sphenomorphus stickeli stickeli* – Inger 1961.

= *Sphenomorphus stickeli melanopleurus* – Inger 1961.

= *Sphenomorphus misolensis* – Bauer et al. 2003.

Acknowledgements

I thank Frank Tillack for his assistance during my visit to the ZMB collection in 2015, and Linda Ford (AMNH), Allen Allison and Carla Kishanami (BPBM), Jens Vindum (CAS), Marinus Hoogmoed

and Esther Dondorp (RMNH) and George Zug (USNM) for either loans of specimens, or assistance during my visits to collections under their care over several decades.

References

Bauer A.M., Shea G., Günther R. 2003. An annotated catalogue of the types of scincid lizards (Reptilia, Squamata, Scincidae) in the collection of the Museum für Naturkunde der Humboldt-Universität zu Berlin (ZMB). – *Mitteilungen aus dem Museum für Naturkunde in Berlin. Zoologische Reihe* **79**: 253–321.

Brongersma L.D. 1933. Over de reptielenfauna van eenige West-Papoeasche Eilanden. – *Vakblad voor Biologien* **15**: 25–32.

de Rooij N. 1915. *The reptiles of the Indo-Australian Archipelago. I. Lacertilia, Chelonia, Emydosauria*. Leiden, E.J. Brill: xiv + 384 pp.

Duméril A.M.C., Bibron G. 1839. *Erpétologie Générale ou Histoire Naturelle Complète des Reptiles. Tome **V***. Paris, Librairie Encyclopédique de Roret, Paris: viii + 854 pp.

Gray J.E. 1845. *Catalogue of the specimens of lizards in the collection of the British Museum*. London, British Museum: xxviii + 289 pp.

Greer A.E., Parker F. 1967. A new scincid lizard from the northern Solomon Islands. – *Breviora* **275**: 1–20.

Greer A.E., Parker F. 1971. A new scincid lizard from Bougainville, Solomon Islands. – *Breviora* **364**: 1–11.

Günther A. 1877. On a collection of reptiles and fishes from Duke-of-York Island, New Ireland, and New Britain. – *Proceedings of the Zoological Society of London* **1877**, No 1: 127–132, pls xx-xxi.

Hedges S.B. 2014. The high-level classification of skinks (Reptilia, Squamata, Scincomorpha). – *Zootaxa* **3765**, No 4: 317–338.

Inger R.F. 1958. Three new skinks related to *Sphenomorphus variegatus* (Peters). – *Fieldiana (Zoology)* **39**, No 24: 257–268.

Inger R.F. 1961. Notes on two New Guinean lizards of the genus *Sphenomorphus*. – *Fieldiana (Zoology)* **39**, No 47: 539–542.

Leviton A.E., Gibbs R.H., Heal E, Dawson C.E. 1985. Standards in herpetology and ichthyology: Part 1. Standard symbolic codes for institutional resource collections in herpetology and ichthyology. – *Copeia* **1985**, No 3: 802–832.

Linkem C.W., Diesmos A.C., Brown R.M. 2010. A new species of scincid lizard (genus *Sphenomorphus*) from Palawan Island, Philippines. – *Herpetologica* **66**: 67–79.

Loveridge A. 1948. New Guinean reptiles and amphibians in the Museum of Comparative Zoölogy and United States National Museum. – *Bulletin of the Museum of Comparative Zoölogy at Harvard College* **101**: 305–430.

Meyer A.B. 1874. [Eine Mittheilung von Hrn. Dr. Adolf Meyer] über die von ihm auf Neu-Guinea und den Inseln Jobi, Mysore und Mafoor im Jahre 1873 gesammelten Amphibien. – *Monatsberichte der königlich Akademie der Wissenschaften zu Berlin* **1874**: 128–140.

Mittleman M.B. 1952. A generic synopsis of the lizards of the subfamily Lygosominae. - *Smithsonian Miscellaneous Collections* **117**, No 17: 1–35.

Mys B. 1988. The zoogeography of the scincid lizards from North Papua New Guinea (Reptilia: Scincidae). I. The distribution of the species. – *Bulletin de l'Institut Royal des Sciences Naturelles de Belgique* **58**: 127–183.

Peters W. 1867. Herpetologische notizen. – *Monatsberichte der königlich Akademie der Wissenschaften zu Berlin* **1867**: 13–37.

Peters W., Doria G. 1878. Catalogo dei rettili e dei batraci raccolti da O. Beccari, L. M. D'Albertis e A. A. Bruijn nella sotto-regione Austro-Malese. – *Annali del Museo Civico di Storia Naturale di Genova* **13**: 323–450, pls i-vii.

Sauvage H.E. 1879. Notice sur quelques reptiles nouveaux ou peu connus de la Nouvelle-Guinée. – *Bulletin de la Société philomathique de Paris, Series 7,* **3**: 47–61.

Shea G.M., Greer A.E. 1999. Two senior synonyms and a name change for the New Guinea Skink *Sphenomorphus stickeli* (Loveridge, 1948). – *Journal of Herpetology* **33**, No 1: 136–141.

Smith M.A. 1937. A review of the genus *Lygosoma* (Scincidae: Reptilia) and its allies. – *Records of the Indian Museum* **39**, No 3: 213–234.

Taylor E.H. 1935. A taxonomic study of the cosmopolitan scincoid lizards of the genus *Eumeces* with an account of the distribution and relationships of its species. – *University of Kansas Science Bulletin* **23**: 1–643.

Vogt T. 1928. Über einige Eidechsen der Molukkeninsel Misol. – *Zoologischer Anzeiger* **76**, No 11/12: 333–335.

Vogt T. 1932. Beitrag zur Reptilienfauna der ehemaligen Kolonie Deutsch-Neuguinea. – *Sitzungsberichte der Gesellschaft Naturforschender Freunde zu Berlin* **1932**: 281–294.

Weber M. 1890. Reptilia from the Malay Archipelago. 1. Sauria, Crocodylidae, Chelonia: 158–177. In: Weber M. (ed.) *Zoologische Ergebnisse einer Reise in Niederländisch Ost-Indien . Volume* **1**. E.J. Brill, Leiden: i–xii, Karte I–III + 1–490, pls I–XXV.

Received: 22.12.2016.

Appendix:

Specimens examined (collection abbreviations follow Leviton et al. 1985):

Sphenomorphus simus (Sauvage, 1879)
AMNH: 58396-401, Tarara, Western Province, PNG; 61810, 61952-55, 66349-53, 105880, Hollandia [Jayapura], Papua Province, Indonesia, 62444-46, Bernhard Camp, Idenburg River, Papua Province, Indonesia; 66691, 95622, 1 mi. N Bonga, Huon Peninsula, Morobe Province, PNG; 82379, probably New Britain, PNG; 94314-40, Mt Besar, above Wailebet, Batanta I., West Papua Province, Indonesia; 95502, Maprik, East Sepik Province, PNG; 95861, Masba Creek, Morobe Province, PNG; 100327-28, Miliom, Sandaun Province, PNG; 100329-33, Lumi, Sandaun Province, PNG; 102237-41, Uraru, Purari River, Gulf Province, PNG; 102242, Soliabedo, Simbu Province, PNG; 102242-43, Camp II, Pio River, Gulf Province, PNG; 103969-70, Daru I., Western Province, PNG; 103971-73, Derongo, Western Province, PNG; 105858, Nobonob, 3 mi. W, 4 mi. N Madang, Madang Province, PNG; 105859-60, Talasea, West New Britain Province, PNG; 109524-29, Gusika, Huon Peninsula, 18 km N Finschhafen, Morobe Province; 111736-40, Emeti, Western Province, PNG; 134061-62, 134064-65, Haidauwogam Village, 27 km S, 5 km E Tabubil, Western Province, PNG.
AMS: R15392-94, Haia Bush Camp, Simbu Province, PNG; R129616, 6 km NNE Amelei, West New Britain Province, PNG; R129620-21, Awit River, SSW Waitpo Village, East New Britain Province, PNG; R129653, Waitpo Village, East New Britain Province, PNG; R135544, 135547, 135549, 135554, Mt Sue, Sandaun Province, PNG.
BPBM: 11922, Weitin River Valley, 13 km N, 10.5 km W of river mouth, New Ireland Province, PNG; 11969, 11974, Lake Camp, 1778 m, Hans Meyer Range, New Ireland Province, PNG; 12039, 12059-61, 12063, 12067-69, 12084, 12095, Weitin River Valley, 8 km N, 7 km W of river mouth, New Ireland Province, PNG; 13117, 13138-41, 13150, Avi Avi River, E branch, 5.5 km S, 5.6 km W Tekadu Airstrip, Ivimka Field Station, Gulf Province, PNG; 43231-33, 43248, 43250, 43251-52, 43256, 43257, AA field series 14788-89, 14799, 14885, 14887, 14889-92, 14919-20, 14923, Kuala Kencana (near sewage plant), *ca* 15.5 km (by air) NNW Timika airport, Papua Province, Indonesia; 43234, 43235-37, 43238, 43239-40, 43241-43, 43244, 43246, 43247, AA field series 14726, 14940, Kuala Kencana Light Industry Park, ca 10 km (by air) N of Timika airport, Papua Province, Indonesia; 43253, *ca* 23 km (by air) NNE of Timika airport, Papua Province, Indonesia; 43254, 43269, AA field series 15342, *ca* 27.5 km (by air) NNE Timika airport, Papua Province, Indonesia; 43255, 43258, 43259-60, 43262-63, AA field series 14851, 14949-53, 14955-56, *ca* 30 km (by air) NNE Timika airport, Papua Province, Indonesia; AA field series 14988, E levee of Minajerwi River, *ca* 18.5 km (by air) SSE of Timika airport, Papua Province, Indonesia; 43264-66, 43270, 15273-74, 43271-74, 15129-31, 15797-99, 16015, Kopi River Rd, *ca* 13 km NNE Timika airport, Papua Province, Indonesia; 15267-68, *ca* 14 km (by air) S of Timika airport, Papua Province, Indonesia.
CAS: 12069, between Lake Sentani and Jautefa Bay, nr Hollandia [Jayapura], Papua Province, Indonesia; 64241, Dutch New Guinea; 117995, Uraru, Gulf Province, PNG; 192847-48, 192850-53, Amron Village, W of Baitabag Mission, Madang Province, PNG.
M. O'Shea collection (to be lodged with BMNH): MDM 69, Wasabmal, near Alexishafen, Madang Province, PNG.
RMNH: RENA 29839, New Guinea; RENA 29841-42, Etna Bay, West Papua Province, Indonesia.
USNM: 159853-54, Finschhafen, Morobe Province, PNG; 195721, 524235-37, *ca* 1-1.5 mi. S Brown River, *ca* 20 km NW Port Moresby, Central Province, PNG; 195722, 524238-40, Inawa, Mekeo subdistrict, Central Province, PNG; 195724, 232348, 524241-43, Vanimo, Sandaun Province, PNG.

Table 1. Measurements of the syntypes of *Lygosoma misolense* Vogt, 1928.

Legends: Measurements are in millimetres; for abbreviations of characters, see Materials and methods.

	ZMB 31523	ZMB 64387
SVL	45.5	36.5
AGL	19.5	15.5
FLL	15.5	13.5
HLL	26	22.5
HL	10.4	9.7
HW	7.9	6.2
HD	6.1	5.0

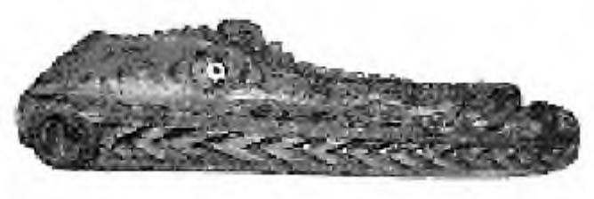
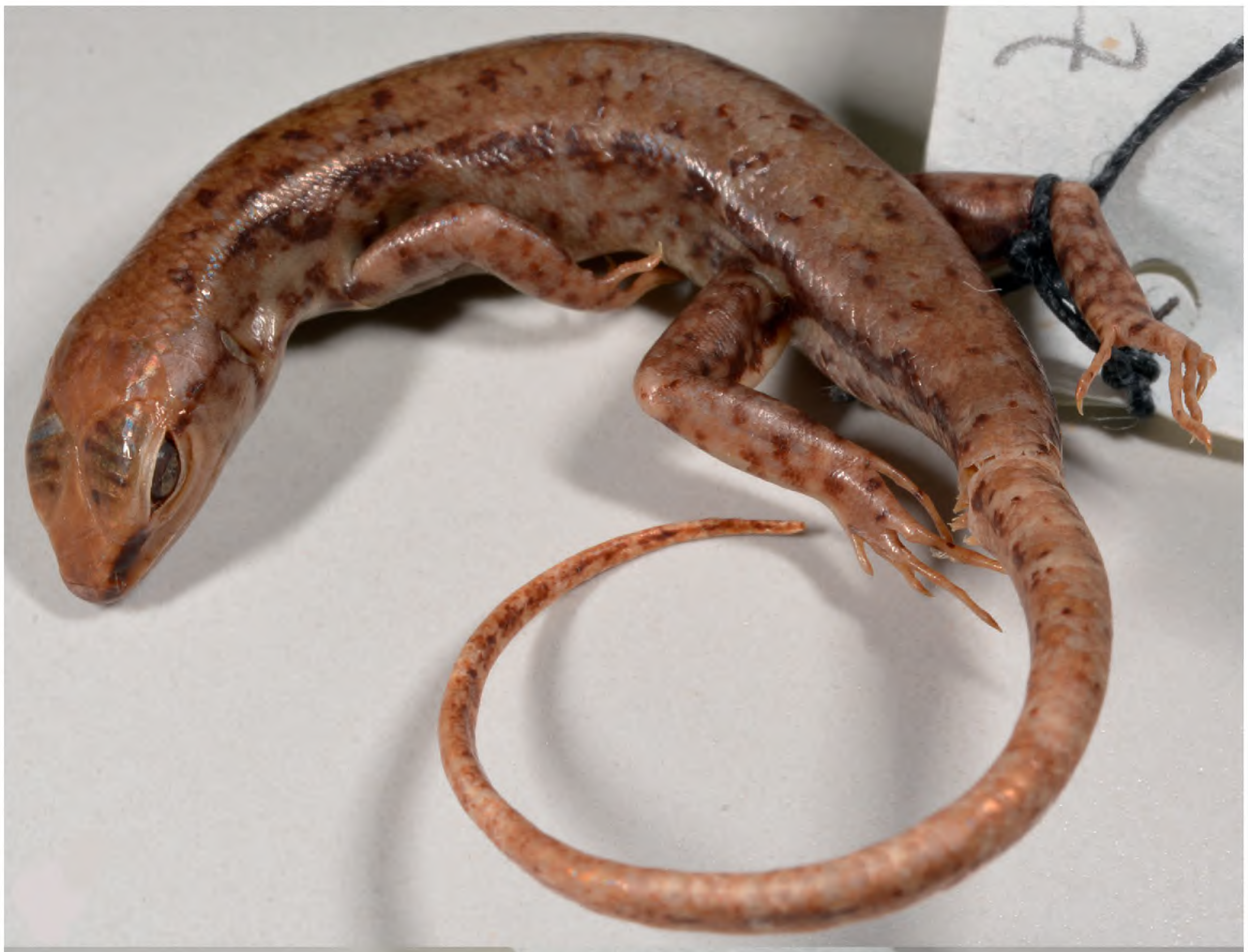


Plate 1

Shea, G.M.: The identity of *Lygosoma (Hinulia) misolense* Vogt, 1928 (Squamata: Scincidae)



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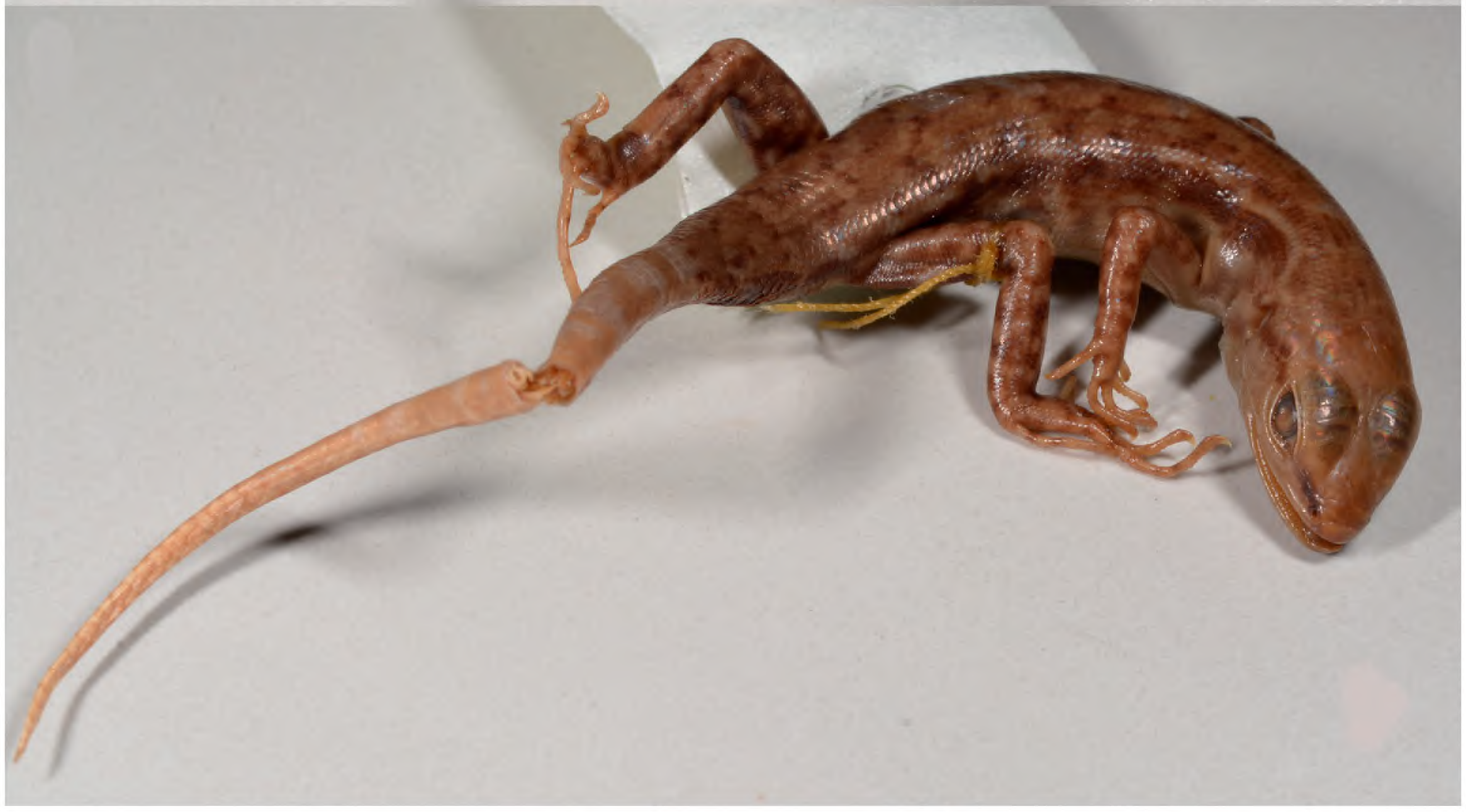

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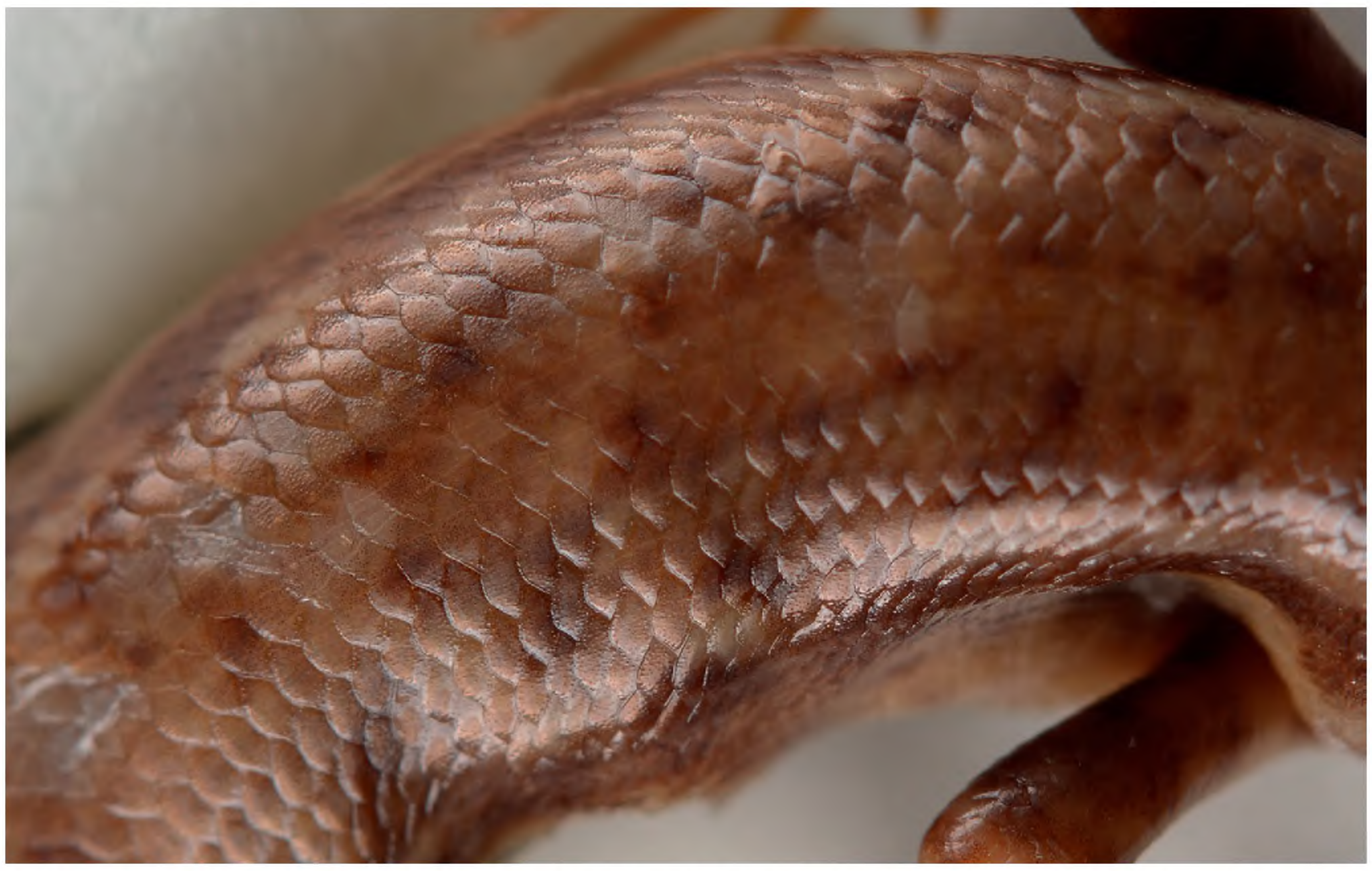

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Figures 1-3. *Lygosoma misolense* Vogt, 1928. 1 – Lectotype (ZMB 31523); 2 – Paralectotype (ZMB 64387); 3 – Details of dorsal and dorsolateral scalation of the paralectotype.